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A NEW SPECIES OF
THE DORADID CATFISH GENUS
LEPTODORAS,
WITH COMMENTS ON RELATED FORMS

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ABSTRACT: *Leptodoras myersi* is described from a trawl haul made in Rio Amazonas near Iquitos, Peru. *Leptodoras juruensis*, previously known only from the holotype taken in Rio Jurua, Brasil, is recorded from the same haul.

It was originally intended that this be a revision of the genus *Leptodoras* but at the last moment it became apparent that the species *L. linnelli* is a composite that will require further study. Also, in Eigenmann's (1925) review of the Doradidae, the related genera *Opsodoras*, *Hassar*, and *Leptodoras* are perhaps the least well defined and thus require more attention. At present, I describe as new a well-marked species and comment on its relatives.

The newly recorded specimens of *Leptodoras myersi* and *L. juruensis* were collected on the 1955 Catherwood Foundation Peruvian-Amazon Expedition by Charles C. G. Chaplin and Ruth Patrick of the Academy's staff. They were taken with an otter trawl from the Amazonas (Marañon) between Isla Iquitos and Isla Lapuna. Only one downstream haul was made, because of the swiftness

of the current and the many snags in the bottom, but this caught a fascinating group of mostly new and rare catfishes plus one specimen of *Rhytiodus microlepis* Kner. This suggests that more bottom sampling should be attempted in the large South American rivers.

For the loan of important specimens, I thank P. H. Greenwood of the British Museum (Natural History) and W. I. Follett of the California Academy of Sciences.

METHODS

The *standard length* measurement was made with some difficulty but, by flexing the caudal fin and using reflected light, I believe fairly good accuracy was achieved. The *head length* includes the fleshy opercular flap. The *eye* and *snout* measurements involve the eyeball proper. The *predorsal* measurement, *length of dorsal spine*, and *depth at dorsal-fin origin* all have as one terminus the anterior groove of the small bony element at the base of the spine. The anterior end of the adipose dorsal-fin base is somewhat difficult to define, but measurements involving it are more easily duplicated in this species than in *L. acipenserinus* for example. The *greatest width of the peduncle* is at the posterior end of the anal-fin base and includes the lateral spines that jut out from the body. The *length of the pectoral spine* is measured basally from the notch, where a needle-point fits in snugly, and not from the extreme base of the spine. *Ventral-fin length* is the greatest length of the fin, not of an individual ray. The *greatest head width* is of the bony portion and not of the rather indifferent fleshy portion posteriorly. The *greatest scute depth* is a vertical measurement of the area covered by scutes, rather than the diagonal measurement of an individual scute.

The *anal-ray* counts are separated into anterior unbranched, small roman numerals, and posterior branched, arabic numerals; the last anal ray sometimes is simple, sometimes consists of two rays united at their bases, but in either case is counted as one. The *lateral scutes* are all of those in the main lateral series, including the ones on the caudal-fin base but not the small ones in the humeral region, the tympanum.

Leptodoras myersi Böhlke, new species.

DIAGNOSIS. This is an elongate, long-snouted species like *L. acipenserinus*, *L. linnelli*, and *L. juruensis*. Its dark color markings, particularly the broad nuchal band, are distinctive. Lateral scutes few, 36 or 37, each scute bearing few points. Total anal-fin rays few, 13 or 14 (except see discussion of *L. linnelli* below). Lacking extremely elongate first dorsal spine of *L. juruensis*. While anterior base of adipose dorsal fin is not sharply defined, it does not extend far forward as a fleshy ridge. Dorsal and pectoral spines with small hooks or spines along their anterior and posterior margins, these weakest on the dorsal spine and strongest on the posterior margins of the pectoral spines. Nuchal foramen



FIGURE 1. *Leptodoras myersi*: Holotype, 74.6 mm. standard length, ANSP 112318.

present. Head covered by small, elongate, pale fleshy ridges, arranged in a pattern (see fig. 1).

DESCRIPTION. The body shape and dark color markings are shown on the photographs (fig. 1). Selected measurements and counts made on a series of 10 specimens appear in table 1.

Dorsal rays I, 6. Total anal rays 13 or 14, nearly always 14. Pectoral rays I, 9 or I, 10, usually I, 10. Ventral rays i, 6/i, 6. Principal caudal rays i, 15, i, the ventral unbranched ray counted not extending back to the tip of the lobe as does the dorsal one. Number of lateral scutes 36 or 37 in equal numbers. Anterior dorsal serrae 7 to 12, posterior dorsal serrae 6 to 11, anterior pectoral serrae 19 to 23, and posterior pectoral serrae 12 to 15; the numbers of serrae apparently are not related to the length of the fish, at least within the limited size range examined.

No teeth present. Nostrils both with raised margins, that of the rear nostril lowest posteroventrally. Anterior nostril nearer eye than tip of snout. Distance between the two nostrils on one side equal to that between posterior nostril and

TABLE 1. *Leptodoras myersi*: Measurements in percent of standard length and several counts of the holotype (*) and nine paratypes.

Standard length (mm.)	60.7	67.3	68.5	68.5	68.8	69.4	74.6*	74.8	76.6	77.6
Head length	35.2	34.5	34.2	34.7	35.6	34.6	33.9	33.3	33.4	34.9
Snout length	19.8	18.9	19.4	19.6	20.3	19.3	19.3	18.8	18.5	19.8
Eye width	04.6	04.6	04.2	04.4	04.1	04.2	04.0	04.3	04.3	04.2
Eye height	03.0	03.0	02.9	03.1	02.8	02.9	02.8	02.8	02.9	03.0
Bony interorbital	04.1	04.2	04.2	04.2	04.2	04.0	04.2	03.9	03.8	04.2
Predorsal distance	41.8	40.9	40.5	41.0	41.7	40.9	40.3	39.4	39.9	40.8
Dorsal fin to adipose origin	22.6	23.2	22.6	22.5	24.4	22.5	21.4	22.7	22.6	23.8
Greatest peduncle width	08.1	07.4	07.6	07.9	08.3	07.5	08.2	07.6	08.1	07.7
Least peduncle depth	03.9	03.7	03.8	03.9	03.9	03.6	03.6	03.6	03.6	03.6
Dorsal spine length	18.0	19.5	19.8	16.8	19.2	19.2	19.0	19.0	17.2	20.0
Pectoral spine length	22.4	21.5	23.1	21.9	23.4	21.3	21.6	22.9	21.4	21.8
Ventral-fin length	20.1	19.5	19.4	18.8	18.7	17.9	18.0	19.1	18.7	17.6
Greatest head width	19.1	18.3	18.8	17.4	18.0	18.4	18.2	18.0	17.4	19.1
Preventral-fin distance	46.1	45.3	45.4	45.8	46.1	45.5	45.8	44.8	45.2	45.2
Preal-fin distance	69.8	68.6	69.9	70.2	69.3	69.6	70.4	69.0	68.1	67.8
Depth at dorsal-fin origin	13.2	13.2	13.3	13.1	13.7	12.7	12.5	12.6	12.9	13.5
Greatest scute band depth	04.6	04.4	04.2	04.2	04.5	04.6	04.7	04.4	04.6	04.5
Anal-fin rays	v,8 ¹	v,9 ²	v,9 ²	vi,8 ²	v,9 ²	v,9 ²	v,9 ²	vi,8 ¹	v,9 ²	v,9 ¹
Pectoral-fin rays	I,10/I,10	I,10/I,10	I,10/I,10	I,10/I,9	I,10/I,10	I,9/I,9	I,10/I,10	I,10/I,10	I,10/I,10	I,10/I,10
Lateral scutes	36	36	37	37	36	37	37	37	36	36

¹ Last ray consisting of two elements united at their bases.² Last ray simple.

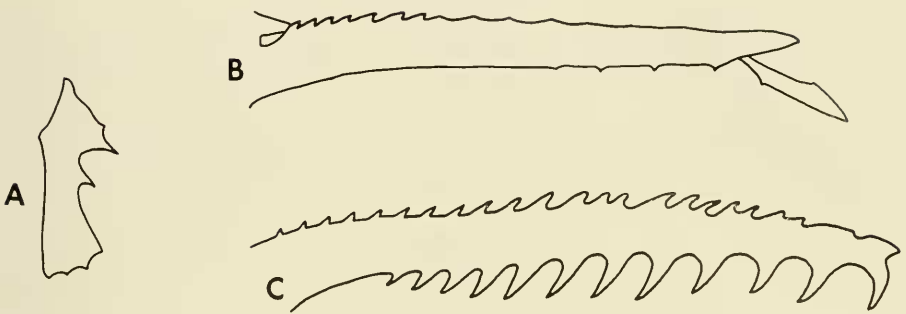


FIGURE 2. *Leptodoras myersi*: Paratype, 63.3 mm. standard length, ANSP 112320. A, outline of sixth lateral scute on left side of fish (central ridge not indicated), 3.1 mm. in longest dimension; B, dorsal spine with break-away tip, main spine 11.5 mm.; C, right pectoral spine, 14.2 mm.

eye. Eyes distinctly horizontally elongate. Horizontal width of eye equal to least width of bony interorbit, or nearly so.

The middorsal fontanel is long and narrow, extending from just behind a line drawn between the rear margins of the posterior nostrils to one drawn between the rear margins of the eyes. A middorsal groove extends in front of the fontanel on the snout and posteriorly from the fontanel to the dorsal-fin origin. Gill membranes connected to isthmus ventrally, the ventral ends of the two gill openings separated by a space of slightly more than the least interorbital width. Gill rakers low fleshy bumps. Two maxillary and 4 mental barbels present, all interconnected to form a hood of considerable size when spread. Each maxillary barbel is divided, its outer portion with barblets along its outer margin; these barblets are in two series, the upper ones short and numerous, the lower ones long and fewer in number. The outer portion of the maxillary barbel usually fails to reach the ventral end of the gill opening but may just attain that level. The inner portion of the maxillary barbel forms the lateral margin of an extensive fleshy lobe that connects the maxillary with the outer mental barbel; this lobe has short barblets around its margin. The mental barbels are studded with short barblets all around. The maxillary is ossified to the extent of about one-third the length of the outer division of the barbel. Branchiostegal rays 7. Upper end of gill opening just behind lower end of upper third of dark opercular spot shown on figure 1.

On the dorsal spine, the anterior serrae are longer than the posterior; the anterior ones are crowded and overlapping, especially basally, are directed toward the spine tip, and are distributed along less than the basal half of the spine. The posterior serrae are short, widely spaced, their tips directed perpendicular to the main axis of the spine or slightly inclined either basally or distally; when their

tips are angled, the outer serrae are tilted basally and the lower serrae are tilted distally. On one individual the uppermost serration is directed distally. The posterior serrae extend along the distal one-half to three-quarters of the spine. There is a distinct ossified break-away tip on the spine when intact, this tip fitting into a median groove in the spine proper; the dorsal spine outlined in figure 2 shows this tip nearly completely disengaged.

On the pectoral spines the anterior serrae are shorter than the posterior, are directed toward the spine tips, and the distalmost one counted forms the tip of each spine (not the case in several related species in which the spine tips are rounded or blunt and without projections). The posterior serrations are strong hooks, their tips directed toward the bases of the spines. There are pointed fleshy extensions beyond the ossified spine tips, indicating that there probably are no ossified break-away segments as on the dorsal spine of this species and the pectoral spines of *L. juruensis* (the latter will be discussed and figured in a subsequent paper when the status of *L. limelli* also will be treated). Pectoral spines, when depressed, extending back well beyond the ventral-fin bases. A single pectoral pore present on each side.

Tips of ventral fins rounded, not extending back to the anal-fin origin. Anal and genital papillae placed between the ventral fins, at or slightly before mid-fin. Adipose dorsal fin well developed, short-based, its origin above points varying between the base of the sixth to the interspace between the seventh and eighth anal rays. Caudal fin distinctly forked, the lower lobe the longer. On the single stained individual there are 18 procurrent caudal rays above and 17 below the principal rays.

In the humeral region there is a sharp spine on the posterior margin of the supraclavicle followed, across the center of the tympanum, by 3 narrow, elongate, mostly embedded ossifications. The first of the three is longest and has a rise in the middle that appears as a low hump externally; the second is completely embedded or with only a minute portion exposed; the third is shortest and bears a sharp projecting spine at its posterior end. The pointed coracoid processes extend posteriorly beyond the base of the last pectoral ray, but not as far back as do the humeral processes; the last-mentioned are shallowly convex dorsally and terminate in a narrowly rounded tip. There is a horizontally elongate nuchal foramen on each side.

The lateral series of scutes begins behind the tip of the humeral process and continues out onto the caudal fin basally. The scute outlined in figure 2 is much like those just before and after it (the outline does not indicate the median longitudinal ridge and the sharp outward angulation of the median spine itself); proceeding posteriorly the scutes become increasingly wider, less deep, less angular, and more overlapping. The terminal ossification in the series is a narrow, elongate, tubular element that lacks a spine and usually is overlooked on

unstained specimens. This was not included in the counts of scutes recorded in this paper; apparently it also was not counted by Eigenmann (1925: 358), for I obtained the same count as he did on the same specimen of *L. acipenserinus*, omitting this element.

The pattern of coloration in alcohol is shown in figure 1; however, the broad nuchal band is more definitely continuous across the dorsum than is suggested on the dorsal view, and the dark opercular margin frequently is more intense and continues farther ventrally. A faint dusky stripe is present on the upper half of the lower caudal-fin lobe, and sometimes there is an even fainter one on the lower half of the upper lobe. The dorsum is dusky between the dorsal fin and caudal-fin base. The top of the head is dusky before the nostrils and in a roughly circular middorsal patch immediately behind the eyes. The basal half or more of the pectoral fin exclusive of the spine (except sometimes the membrane encasing the posterior serrae) usually is distinctly dark, sometimes only dusky and the extent of the dusky area variously more reduced than shown in the figure.

RELATIONSHIPS. The elongate, long-snouted species *L. acipenserinus*, *L. linnelli* (both types if they represent more than one species) and *L. juruensis* are most closely related to *L. myersi*. *Leptodoras juruensis* is the most distinctive and most spectacular looking member of this group, with its extremely elongate anterior dorsal-fin element and distinctive black color markings (see fig. 3); it also has more lateral scutes than the others: 44 to 46 in *L. juruensis*, 42 in *L. acipenserinus*, 38 or 39 in the *L. linnelli* complex, and 36 or 37 in *L. myersi*. *Leptodoras juruensis* is distinctive in certain proportions, but these will be treated later. *Leptodoras myersi* has a lower anal-fin ray count than other species of *Leptodoras* excepting, evidently, the Guianan (typical) population of the *L. linnelli* complex. Eigenmann (1912: 192), in his original description of *L. linnelli*, gave an anal-ray count of 12 to 14; the specimen (ANSP 39734) from Rio Rupununi recorded by Fowler (1914: 264) has 12 rays. *Leptodoras myersi* has 13 or 14 rays, *L. acipenserinus* has 17 rays (16 recorded for the holotype by Günther 1868: 230), *L. juruensis* has 16 or 17 rays, and the Peruvian specimens nearest *L. linnelli* have 15 to 17 rays.

In the size range represented by the Peruvian material, the shapes of the lateral scutes are most similar in *L. myersi* and *L. juruensis*, those of *L. acipenserinus* and nominal *L. linnelli* having more teeth above and below the median spine.

While differing in numerous relative proportions (to be discussed further when the *L. linnelli* question is resolved), *L. myersi* has a distinctly smaller eye than *L. linnelli* (four or five percent of standard length versus seven or eight percent). *Leptodoras linnelli* has no color pattern except for a faint dusky stripe that extends out each caudal lobe, while *L. myersi* has the distinctive pattern described above. *Leptodoras acipenserinus* is described as devoid of a color



FIGURE 3. *Leptodoras juruensis*: 125.8 mm. standard length, ANSP 112321.

pattern (Günther 1868: 230) and IUM 15878 (Eigenmann 1925: 358) shows no trace of one. This color difference, coupled with the differences listed above between the elongate *L. acipenserinus* and *L. myersi*, plus numerous proportional differences that will be outlined in a subsequent paper, indicate how different are the two species. *Leptodoras myersi* has elongate, pale, raised ridges on the head, *L. acipenserinus* has pale low papillae, while *L. linnelli* has nothing of the sort.

NAME. For my professor and good friend, George S. Myers.

MATERIAL EXAMINED. *Holotype*: ANSP 112318 (74.6 mm. standard length, photographed), Peru: vicinity of Iquitos, Rio Amazonas (Marañon) between Isla Iquitos and Isla Lapuna, near Isla Lapuna shore; to 12 ft. (3.66 meters); trawl; 9 October 1955; C.C.G. Chaplin, R. Patrick.

Paratypes: ANSP 112319 (9; 54.9–77.6), ANSP 112320 (1; 63.3, cleared and stained) and USNM 203816 (2; 68.5–74.8), taken with the holotype.

Leptodoras juruensis Boulenger.

Leptodoras juruensis BOULENGER 1898, p. 478 (Type locality: Rio Juruá, Brasil). EIGENMANN 1925, pp. 357, 358 (diagnosis based on type).

Previously known only from the holotype from Rio Juruá, this species now is recorded from the same trawl haul that collected the type material of *L. myersi*. A fine Peruvian example is illustrated in figure 3. Peruvian specimens have been compared with the much larger holotype of the species and the results of this comparison will be forthcoming.

MATERIAL EXAMINED. British Museum (Natural History) 1898–10–11–25 (223 mm. standard length, holotype), Brasil: Rio Juruá; Goeldi. ANSP 112321 (1; 125.8, photographed), ANSP 112322 (6; 71.4–96.7) and USNM 203817 (1; 92.6), taken with the holotype of *L. myersi*.

NOTE

While this manuscript was in proof, a paper on Venezuelan doradids was received from Fernández Yépez (1968, Boletín del Instituto Oceanográfico, Universidad de Oriente, Cumana, Venezuela, vol. 7, no. 1, pp. 7–72). In it, he includes the species "*leporhinus*," "*linnelli*," and "*notospilus*" in the genus *Opsodoras*, whereas "*linnelli*" previously was in *Leptodoras* and "*notospilus*" was in *Hassar*. Subsequent correspondence with that author revealed that his rationale for making these and other nomenclatural changes is in a manuscript still in press. The new species, "*myersi*," is closest to "*linnelli*" and "*acipenserinus*," which were placed by Eigenmann (1925: 357) in *Leptodoras*, so the name combination *Leptodoras myersi* is here published, with the realization that the species may later be transferred to a different genus.

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